



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

(Signature)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/037,847	10/19/2001	Hong-Da Liu	64,600-078	6640
7590	01/16/2004		EXAMINER	
TUNG & ASSOCIATES Suite 120 838 W. Long Lake Road Bloomfield Hills, MI 48302			SCHECHTER, ANDREW M	
			ART UNIT	PAPER NUMBER
			2871	

DATE MAILED: 01/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/037,847	LIU, HONG-DA
Examiner	Art Unit	
Andrew Schechter	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 23 October 2003.
- 2a) This action is **FINAL**. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1,2,4-12,14-16,19 and 20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) 9-12 and 14 is/are allowed.
- 6) Claim(s) 1,2,4-8,15,16,19 and 20 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 23 October 2003 is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) The translation of the foreign language provisional application has been received.
- 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- | | |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ . |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ . | 6) <input type="checkbox"/> Other: _____ . |

DETAILED ACTION

Drawings

1. The drawings are objected to because Figures 2a and 3a have unlabeled elements, do not match Figures 2b and 3b (which are fine), and do not correspond to the description in the specification. In Fig. 2a, what do the diamonds represent and why is the lower right-hand corner solid white? In Fig. 3a, why are there different designs in each of the four corners? What are these figures supposed to show? (Ideally, they would show the claimed grid structure from above.) A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

The proposed drawing correction and/or the proposed substitute sheets of drawings, filed on 23 October 2003 have been disapproved by the examiner, since they do not appear to correct the drawings in any way. A proper drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The correction to the drawings will not be held in abeyance.

Specification

2. The disclosure is objected to because of the following informalities:

In keeping with the amendments to the claims which overcame the previous rejections under 35 U.S.C. 112, and Figs. 2b and 3b, the specification should be amended to change "second light-transmissive substrate" to "first light-transmissive

"substrate" on p. 8, third-from-last line; p. 9, second-to-last line; p. 11, line 6; and p. 14, second-to-last line. Appropriate correction is required.

Response to Arguments

3. Applicant's arguments filed 23 October 2003 have been fully considered but they are not persuasive.

Regarding the previous rejection of claim 13 over *Kim '764*, the applicants assert [p. 17] that they fail to see how the numbers disclosed by the reference were used to arrive at the dimensions recited in the claims. On further consideration, it appears to the examiner that while the width of the electrodes would be in the recited range (2 μm to 20 μm), the distance between the bars (both the vertical distance and the horizontal distance) would be larger than 50 μm , outside the recited range. The previous rejection in view of *Kim '764* is withdrawn.

Claim Objections

4. Claim 15 is objected to because of the following informalities: A typographical error was made in amending claim 15 to overcome the previous rejection under 35 U.S.C. 112 [see Office Action, 18 June 2003, pp. 2-3]. Claim 15 was amended to change "a second electrode" in line 12 to "a first electrode"; "a second electrode" as originally recited is correct. Instead, in line 11 "said second light-transmissive substrate" should have been replaced by --said first light-transmissive substrate-- in order to agree with the specification and figures. Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1, 4, and 5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 4 recites the limitation of “said electrically conductive grid being formed of indium-tin-oxide (ITO)” while the amended claim 1 from which it depends recites “said electrically conductive grid being formed of Cr or MoCr”. Similarly, claim 5 recites “an optically transparent electrode material” (such as ITO), while the specification [p. 9, paragraph 0020] makes clear that Cr and MoCr are not optically transparent electrode materials. The scope of the amended claims 1, 4, and 5 is therefore unclear since they contradict each other. For examining purposes, it is assumed that claim 1 is intended to read “formed of Cr, MoCr, or ITO”, which would make claims 4 and 5 clear.

It is possible that the omission of ITO from the amendment to claim 1 was intentional, in order to overcome the previous rejection in view of *Komatsu*. In order to expedite prosecution, the examiner has provided a rejection below in view of *Kim '776* which satisfies both the limitation “Cr or MoCr” as written, as well as “Cr, MoCr, or ITO” as the examiner believes was intended. This new grounds of rejection is necessitated by the amendment to claim 1.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1, 2, 4, 5, 7, 8, 15, 16, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Kim et al.*, U.S. Patent No. 6,335,776 in view of *Sakamoto et al.*, U.S. Patent No. 6,650,390.

Kim discloses [see Fig. 6, for instance] a wide viewing angle fringe field multi-domain aligned LCD panel comprising: first and second substrates [see abstract]; an electrically conductive layer [13] coated on an inside surface of said first substrate forming a first electrode, said layer being substantially optically transparent [*Kim* discloses forming the pixel electrode 13 of ITO, which is transparent, col. 5, lines 59-62]; an electrically conductive grid [15] formed of horizontal and vertical bars coated on said inside surface of said first substrate forming a second electrode and being formed of either ITO or Cr [col. 5, lines 59-62]; and a cavity formed between the two inside surfaces of said first and second substrates with liquid crystal material filling said cavity as recited [see abstract].

Kim does not explicitly disclose that the substrates are “light-transmissive” or that there is a peripheral seal. *Sakamoto*, in an analogous device, discloses that the substrates are transparent and connected by a peripheral seal. It would have been obvious to one of ordinary skill in the art at the time of the invention to have the

substrates be transparent motivated by the desire that the LCD would be functional in the standard back-lit mode, and to have the seal motivated by the desire that the liquid crystal would not fall out of the device. Claim 1 is therefore unpatentable.

Kim discloses the electrically conductive grid being formed of an electrically conductive metal [Cr], so claim 2 is also unpatentable. *Kim* also discloses forming the grid of ITO, which is an optically transparent electrode material, so claims 4 and 5 are unpatentable. *Kim* discloses the liquid crystal material having either negative or positive dielectric anisotropy [col. 4, lines 60-62], so claims 7 and 8 are also unpatentable.

Kim also discloses the method of making this device, so claim 15 is unpatentable. *Kim* discloses forming the grid of a metal, so claim 16 is unpatentable. *Kim* discloses forming the grid of horizontal and vertical bars formed of metal, and using liquid crystal having a negative dielectric anisotropy, so claim 19 is unpatentable.

9. Claims 1, 4-8, 15, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Lee et al.*, U.S. Patent No. 6,128,061 in view of *Lee et al.*, U.S. Patent No. 6,128,061.

Lee discloses [see Figs. 4 and 7] a wide viewing angle fringe field, multi-domain aligned LCD comprising two transparent substrates [30, 50], a first transparent electrode [39], a second transparent electrode [37] being a grid of horizontal and vertical bars, and liquid crystal [60] filling the cavity between the substrates and the [inherent, else the liquid crystal would fall out] peripheral seal.

Lee does not disclose explicitly what the grid [37] is formed of. However, in an analogous embodiment, *Lee* discloses that the analogous electrodes [27] are to be

Art Unit: 2871

made of ITO [col. 7, lines 49-53]. It would have been obvious to one of ordinary skill in the art at the time of the invention to use ITO for the grid [37], motivated by the teaching of *Lee* to use ITO electrodes in a completely analogous situation, since ITO is transparent, conductive, and its use is well-understood. [Note that ITO satisfies the claim limitations based on the discussion above under 35 U.S.C. 112.] Claims 1, 4, and 5 are therefore unpatentable.

Lee discloses that the liquid crystal material is vertically aligned [see Fig. 7], so claim 6 is unpatentable. The dielectric anisotropy can be either positive or negative [col. 15, lines 51-54], so claims 7 and 8 are unpatentable. The method of making this device is disclosed by *Lee*, so claims 15 and 20 are unpatentable. [Note that claim 15 does recite ITO explicitly.]

Allowable Subject Matter

10. Claims 9-12 and 14 are allowed.
11. The following is a statement of reasons for the indication of allowable subject matter:

The prior art does not disclose a wide viewing angle fringe field multi-domain aligned LCD comprising first and second light-transmissive substrate, first and second electrically conductive grids on the first substrate, both formed of horizontal and vertical bars each having a width between 2 μm and 20 μm , and a distance between bars between about 10 μm and 50 μm . *Kim '764* (cited previously) has horizontal and vertical distances between bars which are about the pixel width, not less than 50 μm ;

Matsuyama (cited previously) has a vertical distance between bars which is about the pixel height, again not less than 50 μm . Claim 9 is therefore allowed, as are its dependent claims 10-12 and 14.

Conclusion

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew Schechter whose telephone number is (703) 306-5801. The examiner can normally be reached on Monday - Friday, 9:00 - 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H. Kim can be reached on (703) 305-3492. The fax phone number for the organization where this application or proceeding is assigned is (703) 746-4711.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

AS
Andrew Schechter
11 January 2004

RK
ROBERT H. KIM
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800